Stacks on Demand Plugin for JIRA

INTRODUCTION

Stacks on Demand is a JIRA add-on that will allow all permitted JIRA users to dynamically build the necessary test boxes such instance types, billing type, branch or etc. for a given work period. The add-on can manage starting or stopping AWS instances.

The Backend Service

The backend service is constant and responds to frontend API requests. It also has a timer to check AWS instances to update the frontend status as well as terminate any instances that are exceeding their allotted execution time.

This service depends on the following disk files:

<table>
<tr><th>File name</th><th>Description</th></tr>
<tr><td>spotstack_startup.cfg</td><td>This file contains the basic startup information and can be manually edited.
It can contain setting such as:
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>loglevel (normal, debug)</td><td>Normal – include service start/stop messages and any SetInstance call summaries.
Debug – includes Normal plus all sent and received AWS call information.</td></tr>
<tr><td>port</td><td>Jira service port to listen</td></tr>
<tr><td>awssettingspath</td><td>This is the path to the spotstack_aws.cfg file containing sensitive information.</td></tr>
<tr><td>stacksettingspath</td><td>This is the path to the spotstack_settings.cfg file. The service can read or write to the file.
Frontend administrators can change this rule file for stack definitions. It should be included in the server’s regular data backup.</td></tr>
<tr><td>awsrefreshseconds</td><td>This is the frequency to update the cached aws instance list, status and the frequency in which the rules will be evaluated to determine when instances should be terminated.</td></tr>
</table></td></tr>
</table>

spotstack.log	This file contains logging information.
spotstack_stacks.cfg	This file contains stack definitions and/or rules and can be manually edited via the service by a frontend administrator. Each record will contain a definition for a stack and will require different entries specific to managing of the stack. The add-on supports multiple EC2 instances across different aws accounts.
spotstack_aws.cfg	This file contains the AWS credentials required to manage the instances. Each set has an identifier and each stack definition will specify to use one of these credential sets. The file can contain multiple aws credentials to handle different stacks in different accounts.

When an instance is started, its stack rule identifier is stored in a tag. This implies that the service can obtain the list of instances, examine their tag and determine which of them are managed by the add-on. After that, these instances can be stopped at any time.

Note: The add-on does not presist this information or attempt to keep local information sync'd with AWS - AWS is the sole keeper of information regarding running instances.

The service will poll AWS based on a timer setting in **spotstack_startup.cfg** to determine which instances are running. If the allotted times have expired, the service will automatically stop that instance.

Info: At service startup it will begin to poll AWS for the instance list and immediately clean up any instances beyond their allotted execution time.

User Interface

The add-on is divided into two main sections. The top section lets you start new stacks. The bottom section allows you to manage running stacks. Each stack definition defines the JIRA group which can start a specific type of stack.

Info: If you start a stack, you will be able to manage that stack while normal users can only see stacks they have started in the running stacks list. Only stack administrators can manage stacks that were started by other users.

REQUIREMENTS

The Stacks on Demand add-on requires JIRA 6.1.x and higher.

An AWS account from Amazon Web Services is required to utilize the features of the add-on.

ROLES AND PERMISSIONS

Generally, **JIRA Administrator** *global permissions* are required to administer and install any add-on including **Stacks On Demand Plugin for JIRA**.

The IAM role is a set of permissions which is usually applied to the user or to an EC2 instance. This field is optional.

Minimum Security Settings

The super-administrator (DevOps) can provide the target account with the role with IAM policy containing the following actions to fulfill:

EC2-specific actions
RebootInstances
RunInstances
StartInstances
StopInstances
TerminateInstances
DescribeInstances
DescribeTags
DescribeSubnets
DescribeSecurityGroups
CreateTags
DescribeImages
PassRole

CF-specific actions	(+EC2 should be included also, as the add-on currently use both CF and EC2 services to manage CF-stack resources)
ListStacks	
DescribeStackResources	
CreateStack	
DeleteStack	
DescribeStacks	
ListStackResources	
DescribeStackResource	

JIRA Group Permissions

Each stack configuration has a required field indicating which JIRA groups can start the stack type.

Non-administrator users will only see running stacks that they have started. Only viewing or editing stacks are the available options in the add-on settings for these users.

A new field specifies which JIRA groups are allowed to start any stack and view all stacks that are running or recently terminated. This setting supports multiple JIRA groups. The default value is **jira-administrators**.

CORE TERMS

All core terms involves part of the add-on configuration and are required to control the Stacks.

The administrator should be aware of the core terms, in the event of working with the add-on:

Core term	Description
StackProfile	Aggregates set of **LaunchProfile** elements in one-to-many relation. This is, however, not applicable to **StackProfile** relating to Stack for CloudFormation service.
LaunchProfile	There is a strong one-to-one relation of LaunchProfile elements, especially with its two subtypes – **EC2 LaunchProfile** and **CF LaunchProfile**. **EC2** – The LaunchProfile for Elastic Compute Cloud (EC2) defines one or many instances or spot requests. **CF** – The CloudFormation LaunProfile defines a template with provided parameters and will be managed by CloudFormation to build and start the Stack. The aim of the LaunchProfile is to commonly start the Stack or set of EC2 instance resources.
AwsAccount	CloudFormationLaunchProfile CloudFormationStackTemplate

CLOUD FORMATION

CloudFormation is a user-defined template which contains script to create an EC2 instance with IAM Role.

The sample CF templates are available at:

https://github.com/AdvancedProcessDesigns/StacksOnDemand

Template name	Description
demo0-cf-template-ec2instance.json	Cloud Formation Template, which runs empty EC2 instance
demo0-cf-template-ec2instance.readme	Provides instructions on how to setup the Stacks on Demand add-on with *demo0-cf-template-ec2instance.json*
demo1-cf-template-helloworld.json	Cloud Formation Template, which launch EC2 instance from publicHelloWorld AIM
demo1-cf-template-helloworld.readme	Provides instructions on how to setup the Stacks on Demand add-on with *demo1-cf-template-helloworld.json*
demo2-cf-template-helloworldwithcolor.json	Cloud Formation Template, which launch EC2 instance from publicHelloWorldWithParams AIM
demo2-cf-template-helloworldwithcolor.readme	Provides instructions on how to setup the Stacks on Demand add-on with *demo2-cf-template-helloworldwithcolor.json*

INSTALLATION

You must have the **JIRA System Administrators** *global permission* to install add-ons.

Installation via Atlassian Marketplace

1. Go to the **Stacks on Demand Plugin for JIRA** Atlassian Marketplace page.
2. Buy or evaluate the add-on with a free 30 day trial.
3. Login to your JIRA account, if required, to proceed installation of the add-on. The license key is automatically configured into the add-on configuration for free trial licenses. For purchased license keys, see *Setup License Key*.

Installation via JIRA Universal Plugin Manager

1. In JIRA, go to  ***Administration*** > ***Add-ons***. The ***Find New Add-ons*** page is displayed.
2. Search the Marketplace with '**stacks**' search phrase.
3. Buy the add-on or start the free trial for 30 days.
4. Login to your JIRA account, if required, to proceed installation of the add-on. The license key is automatically configured into the add-on configuration for free trial licenses. For purchased license keys, see *Setup License Key*.

Manual Installation

To manually update the Git add-on, the user must have the **JIRA System Administrators** *global permission*. If the user does not have this permission, the upload add-on and other system administration functions will not be available.

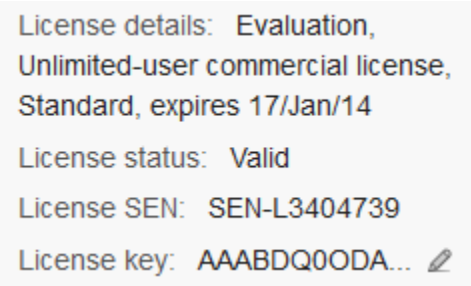
Use manual install if you have a specific version of **Stacks on Demand Plugin for JIRA** downloaded from the marketplace or sent by some other file sharing method:

1. In JIRA, go to  ***Administration*** > ***Add-ons*** > **Manage Add-ons.**
2. Click  Upload Add-on and navigate to the jar file that you already have.

3. Click **Upload**. Restart your application for changes to take effect.
4. Buy the add-on or start the free trial for 30 days.
5. Login to your JIRA account, if required, to proceed installation of the add-on. The license key is automatically configured into the add-on configuration for free trial licenses. For purchased license keys, see *Setup License Key*.

SETUP LICENSE KEY

Go to the **Stacks on Demand Plugin for JIRA** add-on configuration.



Click the **Edit** icon to enter/change the **License key**.

If the ***License key*** field is blank, you need to obtain a license for the Stacks on Demand add-on. Click **Buy now** or **Free trial**. Login to your Atlassian account, when prompted, to acquire the license based on your selected license mode.

CONFIGURING STACKS ON DEMAND

Go to  **Administration** > **Add-ons** >  **Stacks on Demand.**

Only JIRA Administrators are allowed to configure these settings.

STACK CONFIGURATION

This page allows administrators to paste the XML code for the stack configuration.

1. Type or paste the XML code of the stack configuration on the provide code box.

2. Click **Save** to save the changes.

LOG VIEWER

Log processes of running stacks are displayed in this page.

CREDENTIALS

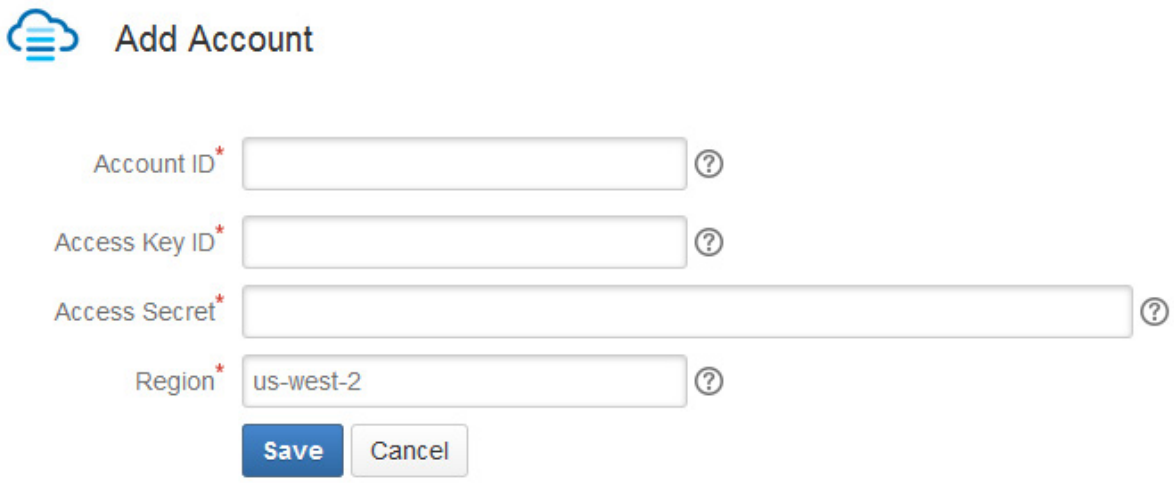
On this page, administrators can manage configured AWS accounts. A list of configured AWS accounts is displayed.

Field	Description
Account ID	This is the AWS Account ID. Typically, this is the login ID.
Access Key ID	This is the AWS Access Key ID. It's a unique identifier associated with a secret access key.
Access Key Secret	This is the Access Key Secret string for this account. You can generate secret access keys, individual IAM users, and temporary sessions thru your AWS account.
Region	Displays a named set of AWS resource in the same geographical area.
Actions	 - Edits the AWS account.  - Removes AWS account.

Adding a New Credential

To add a new AWS account, click **Add AWS account**.

The **Add Account** screen is displayed:



Enter required information. All fields must be populated.

Click **Save** to save the changes.

Editing a Credential

Click the icon under the **Actions** *column* to make changes to the selected credential.

You will be presented with the screen similar to adding a credential but with details filled out. Edit as required then click **Save** to accept the changes.

Removing a Credential

Click the icon under the **Actions** *column* to delete the selected credential.

LAUNCH PROFILES

On this page, administrators can manage configured Launch Profiles. A list of configured launch profiles is displayed for each section, EC2 and Cloud Formation Launch Profiles.

EC2 Launch Profiles

Name	Type	Instance Type	Availability Zone	IAM Role	Actions
Hello World	On Demand	t2.micro	us-west-2c		
Public Hello World With Params	On Demand	t2.micro	us-west-2c	readEc2TagsAndIpRole	

Add

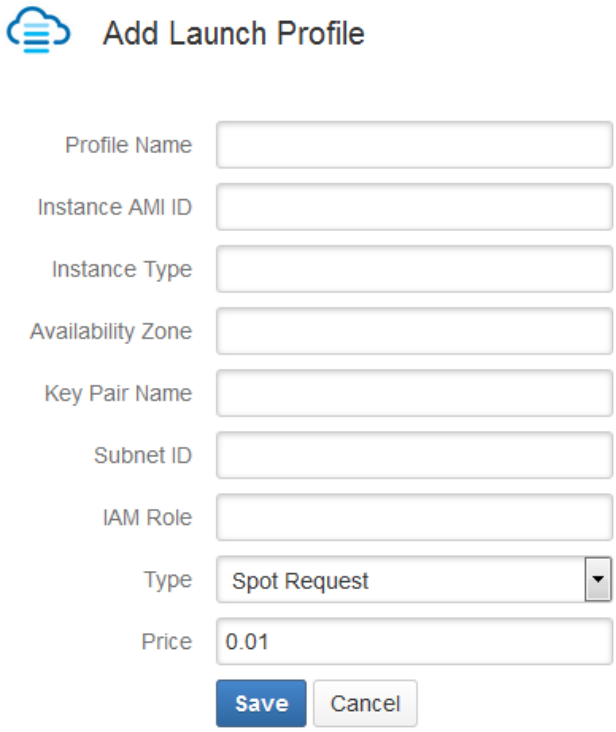
Cloud Formation Launch Profiles

Name	Template	Parameters	Actions
An empty EC2 instance	Create an EC2 instance	{KeyName=apdaws}	
Demo HelloWorld	Create an EC2 from helloWorld AMI	{KeyName=apdaws}	
Demo2 HelloWorld	Create an EC2 from helloWorldWithColor AMI	{IAMRole=readEc2TagsAndIpRole, KeyName=apdaws}	

Add

Adding a New EC2 Launch Profile

To add a new launch profile, click **Add** on the EC2 Launch Profile section. The following screen is displayed:



Utilize the following options to enter required information:

Option	Description
Profile Name	Name of the launch profile.
Instance AMI ID	Stack type.
Instance Type	Type of stack instance.
Availability Zone	Refers to the region the stack is located.
Key Pair Name	Enter key pair name for this launch profile.
Subnet ID	Enter subnet ID.
IAM Role	IAM permission role of the launch profile.
Type	Select Spot Request or On-Demand. Spot Request and On-Demand instances are purchasing options of AWS. For detailed information, see Amazon EC2 Instance Purchasing Options.
Price	Price of the stack service per hour.

Click **Save** to save the changes.

Editing the EC2 Launch Profile

Click the icon under the **Actions** *column* to make changes to the selected EC2 launch profile.

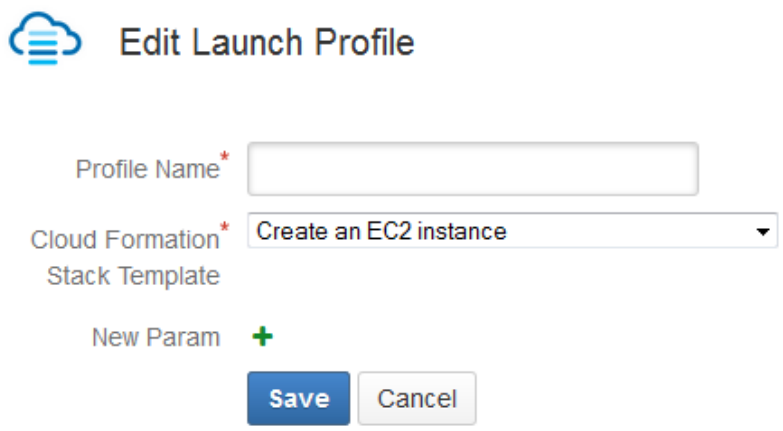
You will be presented with the screen similar to adding an EC2 launch profile but with details filled out. Edit as required then click **Save** to accept the changes.

Removing an EC2 Launch Profile

Click the icon under the **Actions** *column* to delete the selected credential.

Adding a CloudFormation Launch Profile

To add a new launch profile, click **Add** on the CloudFormation Launch Profile section. The following screen is displayed:



Utilize the following options for entering required information:

Option	Description
Profile Name	Enter a descriptive name for this CloudFormation launch profile.
Cloud Formation Stack Template	Select available templates derived from the **CF Stack Templates** tab.
New Param	Click + to add a new parameter. Several parameters can be added. Enter a string value for ***ParamName*** and declare a ***paramValue*** or a variable declaration. Click ⊗ to remove the selected parameter group.

Click **Save** to save the changes.

Editing the CloudFormation Launch Profile

Click the icon under the **Actions** *column* to make changes to the selected CloudFormation launch profile.

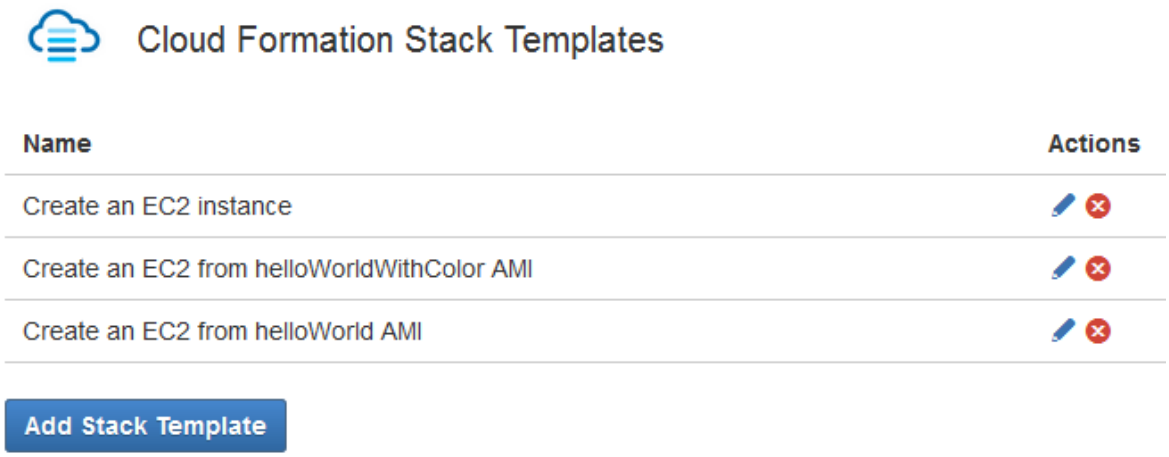
You will be presented with the screen similar to adding a CloudFormation launch profile but with details filled out. Edit as required then click **Save** to accept the changes.

Removing an CloudFormation Launch Profile

Click the icon under the **Actions** *column* to delete the selected CF launch profile.

CF STACK TEMPLATES

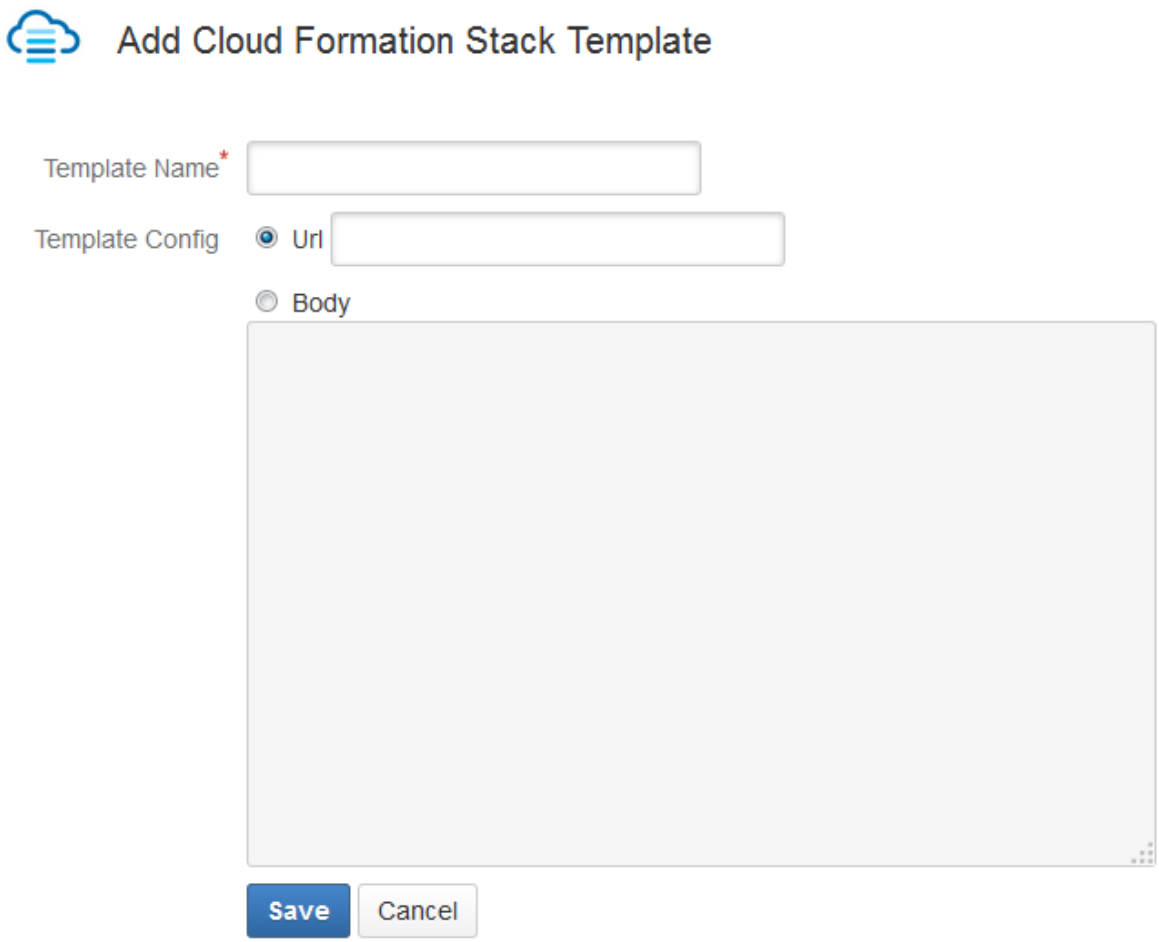
Manage CloudFormation Stack templates on this page. A list of configured templates is displayed.



Adding a CloudFormation Stack Template

Add a new CF stack template by clicking **Add Stack Template**.

The following screen is displayed:



Enter a unique **Template Name**.

For **Template Config**, enter the required valid URL pointing an existing template configuration. Select **Body** then type or paste your template configuration in the box provided.

Click **Save** to save the changes.

Editing the CloudFormation Stack Template

Click the icon under the **Actions** *column* to make changes to the selected CloudFormation stack template.

You will be presented with the screen similar to adding a CloudFormation stack template but with details filled out. Edit as required then click **Save** to accept the changes.

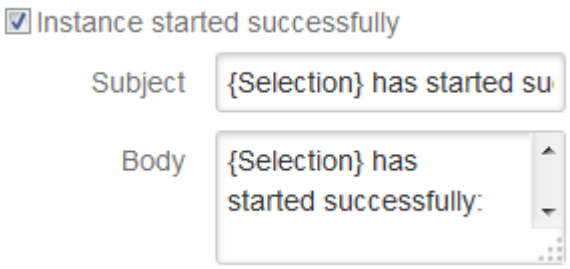
Removing an CloudFormation Launch Profile

Click the icon under the **Actions** *column* to delete the selected CF stack template.

EMAIL

Determine how instances are doing by sending administrators selected log activities to their email address.

Users that have started a stack will receive selected alerts thru their email address. All options are selected by default.



Configure **Subject** and **Body** *fields* for each selected option as required.

An email template in a gray background block is displayed below the page for reference on body message writing.

The **IP**, **Status**, **ExpireTime**, **StartedTime**, **StartedBy**, **Selection** and **TimeRemaining** are reserved words for the state of the particular stack. These are placeholders enclosed in curly braces "{ }" and actual values will appear on the recipient's email.

All other placeholders will be recognized by Stack on Demand add-on as a custom field for Stack. The add-on will attempt to place the proper values such as **{color}**, **{Branch}**, **{Description}** and etc.

Click **Save** to save the changes.

GENERAL

The **General** tab contains stack settings that can only be accessed by JIRA administrators.

Option	Description
Terminate service rate	States how often expired stacks are checked (in minutes). *0 = never. Default value is 1.*
AWS Cache TTL	States how long stacks could stay in the EC2 response cache (in seconds). *A value of 0 disables the cache. Default value is 15 seconds.*
Log level	Defines the detail of the log level – Normal or Debug. Debug has a more verbose log detail.
Custom Field [n]	Click  to add a new custom field. Several custom fields can be added so that they are recognized by the add-on as placeholders in the **Email** > ***message body***. Enter a string value for ***ParamName*** and declare a ***paramValue*** or a variable declaration. Click  to remove the selected custom field.
Stack admins	Assign a JIRA user group to administer configured stacks. Several groups can be assigned to this field. Click on this field and select the required user or group from the list. Click **x** on an existing group to exclude that group from this field.